

an agreed incentive regulation plan). This initiative was started in spring 1994 in partnership with the West Virginia Department of Education to provide high-capacity information access capacity to public education sites that fall within the phone company's service area. The program is mainly used for Internet access.

Some local communications companies have linked schools to the Internet, and eventually all schools should have access. The state has been awarded a \$2 million grant from IBM for a project aimed at harnessing the Internet for public education instruction.

### *Wisconsin*

The 1995/97 state budget included provisions establishing a statewide education and library technology program called **Pioneering Partners**, a \$10 million grant program to be administered by the recently founded **Education Technology Board**. The program will make funds available beginning in July 1996 to train teachers and librarians in the use of technology to integrate educational technology applications, to offer community education opportunities, and to purchase or upgrade equipment, materials, or wiring. Grants will require 25 percent local matching funds. In addition, \$15 million will be made available through the state trust loan fund program for low-interest loans to schools and libraries for technology projects. This program represents the state's most extensive direct investment in technology for use in schools and libraries.

The University of Wisconsin runs an **Educational Teleconference Network** that coordinates satellite courses by the **Educational Communications Board** and delivers instruction to classrooms, libraries, and work sites miles from instructors' locations.

The **Embarrass River Valley Instruction Network Group** connects seven rural high schools through a two-way interactive fiber optic network provided by a private phone company. Up to four classes can be taught by the same teacher. This network provides advanced courses and offers instruction to the region's teachers.

The **Northern Wisconsin Educational Communication System** will connect 18 school districts and more than 40 sites, including University of Wisconsin campuses.

In May 1995 the governor appointed an 18-member board to oversee the **Wisconsin Advanced Telecommunications Foundation**. Ameritech, the state's largest local phone carrier, has allocated \$1 million as an initial contribution to the foundation. The foundation ultimately hopes to establish an endowment of \$40 million, using interest funds for schools and libraries to conduct technology-related projects.

Appendix I  
Benton Foundation

CC Docket No. 96-45  
DA 96-1078

**Universal Service:**

**An Historical Perspective**

**and Policies for the 21st Century**

**Prerelease draft**



**Benton Foundation**



**Consumer Federation of America**

## **The Consumer Federation of America**

The Consumer Federation of America is a nonprofit association of some 240 pro-consumer groups, with a combined membership of 50 million, that was founded in 1968 to advance the consumer interest through advocacy and education.

## **The Benton Foundation**

The Benton Foundation believes that communications in the public interest, including the effort to connect all Americans to basic communications systems, is essential to a strong democracy. Benton's mission is to realize the social benefits made possible by the public interest use of communications. Benton bridges the worlds of philanthropy, community practice, and public policy. It develops and provides effective information and communication tools and strategies to equip and engage individuals and organizations in the emerging digital communications environment.

The Benton Foundation's Communications Policy Project is a nonpartisan initiative to strengthen public interest efforts in shaping the emerging National Information Infrastructure (NII). It is Benton's conviction that the vigorous participation of the nonprofit sector in policy debates, regulatory processes, and demonstration projects will help realize the public interest potential of the NII. Current emphases of Benton's research include extending universal service in the digital age; the future of public service in the new media environment; the implications of new networking tools for civic participation and public dialogue; the roles of states as laboratories for policy development; and the ways in which noncommercial applications and services are being developed through new telecommunications and information tools.

# **Universal Service**

## **An Historical Perspective**

### **and Policies for the 21st Century**

*A joint publication of the Benton Foundation and the Consumer Federation of America*

*By Mark Cooper*

This is a preliminary draft prepared for delivery at the meeting of the National Association of Regulatory Utility Commissioners (NARUC) in Los Angeles, California. It is intended to begin a dialogue between state regulatory commissions and public interest advocates as they work together to define what "affordable" rates are for telecommunications services. The paper looks back at the course of the evolution of universal service policy and also offers recommendations for the evolving policy outlined in the Telecommunications Act of 1996. The final version of this paper will be available through the Benton Foundation later this summer.

---

# I.

## Universal Service—A century of commitment

### A. The fundamental goal

Soon after the start of the twentieth century, Theodore Vail, president of AT&T, articulated his vision of the future of the nascent telephone industry:

The Bell system was founded on broad lines of "One System," "One Policy," "Universal Service" on the idea that no aggregation of isolated independent systems not under common control, however well built or equipped, could give the country the service. One system with a common policy, common purpose, and common action; comprehensive, universal, interdependent, intercommunicating like the highway system of the country, extending from every door to every other door, affording electrical communication of every kind from every one and every place to every one at every other place.

Vail's vision may have been intended as much to further the corporate strategy of the powerful Bell company as to promote a social policy, but the concept of universal service—connecting each to all—has been at the center of telecommunications policy ever since.<sup>2</sup> Vail's vision was certainly futuristic at the time, since only about 10 percent of the households in the country had telephone service.<sup>3</sup> But this goal was effective, and produced a rapid extension of service and concentration in the industry.<sup>4</sup> A quarter of a century later, when Congress passed its first piece of comprehensive legislation dealing with the telecommunications industry (the Communications Act of 1934), the penetration of telephone service had risen to almost 40 percent. And AT&T's market share had risen from about 50 percent to over 80 percent.<sup>5</sup>

In the Communications Act of 1934 Congress established a national policy of universal service that went beyond merely laying the wires and infrastructure to connect each to all. It included a commitment to making service economically accessible to all Americans. To continue the highway analogy introduced by Vail, it was not enough that the roads be in place, public policy declared that the pricing of usage be such that all Americans could avail themselves of telephone service. The Federal Communications Commission (FCC) was created at this time,

[f]or the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible to all the people of the United States, a rapid, efficient, Nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges.<sup>6</sup>

Today, as the twentieth century draws to a close, Congress has not only reaffirmed the central importance of universal service in telecommunications, but it has vastly expanded the scope and specificity of the concept.

Section 254 of The Telecommunications Act of 1996 vastly expands the concept of universal service<sup>7</sup> (see Table I-1):

1) The FCC is charged with assuring that all rates for universal service are just, reasonable, and affordable, not just the rates for interstate services.

2) The word "affordable" had not been used before this legislation, but the 1996 Act introduces the concept of affordability directly and explicitly into national policy.

TABLE I-1. The universal service goals of the Telecommunications Act of 1996

254(b) *Universal service principles*—The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:

- (1) *Quality and rates*—Quality services should be available at just, reasonable, and affordable rates.
- (2) *Access to advanced services*—Access to advanced telecommunications and information services should be provided in all regions of the country.
- (3) *Access in rural and high-cost areas*—Consumers in all regions of the nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas at rates that are reasonably comparable to rates charged for similar services in urban areas.
- (4) *Equitable and nondiscriminatory contributions*—All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.
- (5) *Specific and predictable support mechanisms*—There should be specific, predictable, and sufficient federal and state mechanisms to preserve and advance universal service.
- (6) *Access to advanced telecommunications services for schools, health care, and libraries*—Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h).
- (7) *Additional principles*—Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act.

Section 255. *Access by persons with disabilities*

- (b) *Manufacturing*—A manufacturer of telecommunications equipment or customer premise equipment shall ensure that the equipment is designed, developed, and fabricated to be accessible to and usable by individuals with disabilities, if readily achievable.
- (c) *Telecommunications services*—A provider of telecommunications services shall ensure that the service is accessible to and usable by individuals with disabilities, if readily achievable.
- (d) *Compatibility*—Whenever the requirements of subsections (b) and (c) are not readily achievable, such a manufacturer or provider shall ensure that the equipment or service is compatible with existing peripheral devices or specialized customer premise equipment commonly used by individuals with disabilities to achieve access, if readily achievable.

- 3) The 1996 Act expands the services to which the universal service concept applies and institutes a formal process for expanding the definition of universal service over time.
- 4) Although access to the network for high-cost areas and low-income consumers has been supported for years, the 1996 Act explicitly requires this policy and requires that it be implemented with specific and predictable mechanisms, in the form of contributions from all providers of telecommunications services, to support universal service.
- 5) A whole new range of institutions has been identified as having a role in universal service policy.
- 6) Section 255 also adds a commitment to consumers with disabilities.

---

## **B. Changing industry structure**

Although telephone service is much more widespread today, being subscribed to by about 94 percent of all U.S. households,<sup>8</sup> the new commitments made in the 1996 Act may constitute no less of a forward-looking goal than earlier statements of universal service policy. Not only does the 1996 Act expand the concept of universal service in several areas, but it also charges the Commission with accomplishing expanded universal service access at the same time that the form of industrial organization in telecommunications undergoes a change. The Act requires states to allow competition in local telephone service by removing the legal and regulatory barriers the local exchange companies have operated under since before the passage of the Communications Act in 1934. The Conference Report states the overall purpose of the law is

to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition.<sup>9</sup>

The task facing regulators is to implement a significantly more inclusive and aggressive concept of universal service in harmony with the pro-competitive and deregulatory goals of the 1996 Act.

## **C. Purpose and outline of the paper**

Although the outline for universal service and competition policy for the twenty-first century has been laid down by Congress, the content of those policies remains an open issue. Over the next year or so the FCC<sup>10</sup> will issue rules and guidelines to fill in the details. The states—simultaneously in some instances, subsequently in others—will put their own stamp on universal service by adopting state-specific policies to meet their individual needs while they continue to exercise full authority over the setting of retail rates.<sup>11</sup>

Thus, in a flurry of proceedings over the next year or two, 50 regulatory bodies will write the road map for the information superhighway, determining who has access to what services at what prices. And if the Internet and other advanced telecommunications services prove to be anywhere as powerful a social force in the twenty-first century as plain old telephone service proved to be in the twentieth, a great deal is at stake for consumers.<sup>12</sup>

This paper is intended to encourage public interest groups to become actively involved in the process of defining the information age by illuminating the fundamental questions they will face in the debate over universal service. It attempts to demystify the regulatory issues that citizen intervenors will face in the policymaking process at regulatory commissions, first by presenting a forward-looking, consumer-friendly position on policy issues, and then describing rebuttals to the arguments they are likely to encounter from governmental and industry representatives.<sup>13</sup>

Industry representatives frequently suggest that technology will dictate the shape of the telecommunications future and that economic policy analysis is beyond the ken of citizen intervenors. But the initial reaction to the FCC's first Notice of Proposed Rulemaking under the new law, implementing the universal service section of the 1996 Act, makes it clear that policy decisions can dramatically influence where and how the information superhighway is built, who gets to use it, and how costs are allocated.<sup>14</sup> Over 200 comments were filed at the FCC, many by public interest groups, all providing the Commission an enormous amount of information on what services should be universal. Because the federal proceeding on universal service will greatly influence the overall outcome and has elicited much comment, the issues and positions taken in that proceeding will be used as primary material in this paper, although the more highly developed universal service policies in some states will also be reviewed.<sup>15</sup>

---

We begin with the broad commitment to universal service. Chapter II deals with the issue of ensuring just, reasonable, and affordable rates for the general body of ratepayers. The cornerstone of universal service policy has always been a commitment to ensuring access to service for average citizens. Chapter III reviews the definition of affordability, a concept which has been introduced explicitly into the law. Chapter IV discusses which services have been proposed for inclusion in the definition of "basic service." Chapter V addresses the issue of people who need more than the simple policy of ensuring just, reasonable, and affordable rates for all in order to obtain universal service access. It describes eligibility for groups of individuals, as well as special arrangements necessary to support institutions—both companies and public institutions.

## II. Universal, affordable service

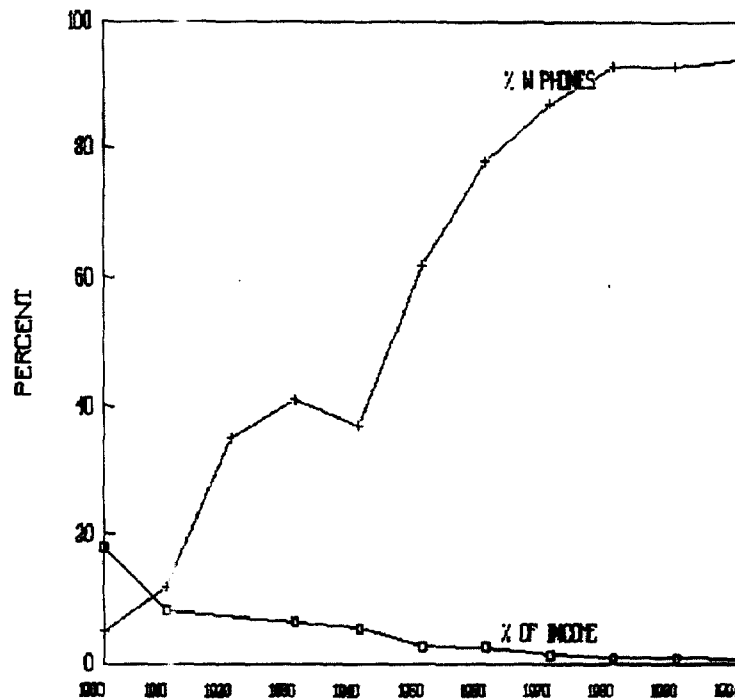
### A. Progress toward the goal of universal service

Figure II-1 presents data from the beginning of the twentieth century to the present on the percentage of households with telephone service, and the cost of service relative to the national average per capita income. While the cost of service, expressed as a percentage of income, is only one factor affecting the decision to take telephone service, it is certainly the most important factor because it incorporates the two most important economic factors affecting the demand for any commodity—the income elasticity of demand and the price elasticity of demand.<sup>16</sup>

At the turn of the century telephone service had been adopted by a small part of the population, something on the order of 5 percent.<sup>17</sup> The monthly cost of service was quite high relative to income, around 18 percent. Over the first three decades of the century, the relative cost of the service declined dramatically, to around 6.3 percent of income. The penetration rate increased sharply, to just over 40 percent.

Telephone penetration rates stagnated throughout the depression, and then skyrocketed in the post-war years. From 37 percent in 1940, penetration jumped to 93 percent in 1980. This rapid spread of tele-

Figure II-1. Percent of households with telephones and cost of service as a percentage of per capita income



**Sources:**

U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (Washington, D.C., 1975), Tables F17-30, R1-12.

John Robert Meyer, *The Economics of Competition in the Telephone Industry* (Oelgeschlager, Gunn & Hain, Cambridge, Mass, 1980).

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Federal State Staff, Federal State Joint Board, *Monitoring Report*, CC Docket No. 87-339, May 1995, Table 1.1.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

phone service coincided with a dramatic decline in the cost of service relative to income. By 1980 the monthly cost of service had fallen to less than 1 percent of income.

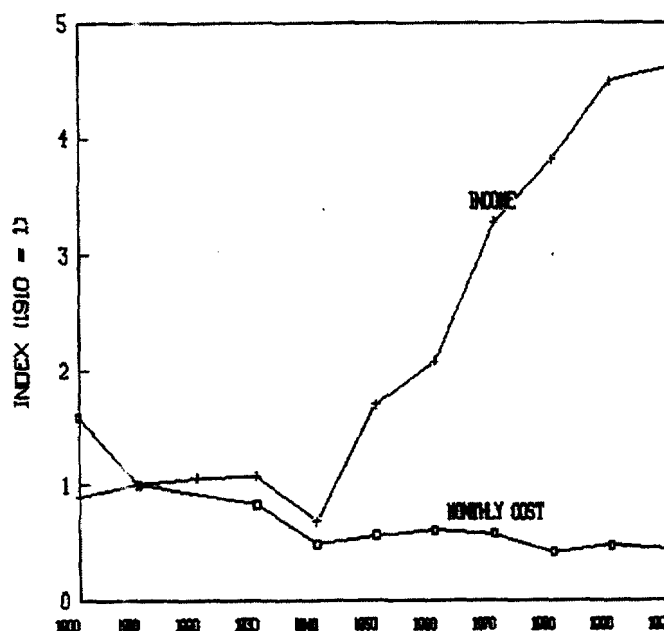
Figure II-2 shows that the dramatic decline in the cost of telephone service relative to income in the early years was predominantly the result of falling real prices.<sup>18</sup> Between 1900 and 1930, the real cost of service fell by about 50 percent. Income grew by 20 percent. After World War II, the declining relative cost of service was predominantly a result of rising income levels.<sup>19</sup> Real income grew by over 300 percent between 1940 and 1980, while the real cost of service again fell by about 25 percent.

## B. Universal affordable rates for all<sup>20</sup>

For the six decades between the passage of the Communications Act of 1934 and the Telecommunications Act of 1996, universal service was implemented by a general approach to setting rates for basic service, applying principles of cost allocation and cost recovery to try and keep the cost of basic service low and affordable. The cornerstone of this process had been laid down in two fundamental principles of ratemaking, established in case law around the time of the passage of the 1934 Act.<sup>21</sup>

First, in a series of cases starting in the 1920s, the concept of rate of return regulation came to rest on the principle of just and reasonable rates, defined by the courts to require that regulators grant companies only the opportunity to earn a return commensurate with the risks that they faced.<sup>22</sup> This kept the total revenue requirement to be collected from ratepayers under control.

Figure II-2. Indices of per capita income and telephone costs  
(Real dollars, 1910=1)



### Sources:

U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (Washington, D.C., 1975), Tables F17-30, R1-12.

John Robert Meyer, *The Economics of Competition in the Telephone Industry* (Oelgeschlager, Gunn & Hain, Cambridge, Mass, 1980), Tables 2-2, 2-3, Figures 2-2, 2-3.

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Federal State Staff, Federal State Joint Board, *Monitoring Report*, CC Docket No. 87-339, May 1995, Table 1.1.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

---

Second, the courts upheld the principle that the costs for the shared facilities in the telecommunications network—facilities used for more than one service—should be shared among the full range of services and customer classes that used the network.<sup>23</sup> In particular, long distance services were required to cover a part of the cost of the loop facilities that were used in the completion of long distance calls. This kept the share of the revenue requirement to be collected from basic service to residential ratepayers under control.

Flowing from this legal foundation, many regulators kept the share of these costs placed on basic service low (the mark-up of basic service prices above direct costs was small), but not below cost.<sup>24</sup> Consequently, the share of these costs recovered from non-basic services—long distance usage, enhanced services like call forwarding—has been high. Overlaid on this cost allocation approach were substantial economic efficiency gains in the industry—fueled by economies of scale which lowered costs as more and more users joined the network—that enabled prices to fall across the board.<sup>25</sup> Economies of scale, which flow from more users sharing facilities, were particularly suited to allocation approaches that kept basic service low.

For as long as regulators have engaged in the practice of keeping basic service rates low by allocating joint and common costs to other services, various industry, academic, and consumer groups have argued about whether keeping rates low involves a subsidy and which way the subsidy flows—to the company or to the consumer.<sup>26</sup> Those who use non-basic services intensively (generally business customers) would like to see a larger share of joint and common costs allocated to basic service. This would result in lower rates for the services they rely on more heavily.<sup>27</sup> Telephone companies have also argued that a larger share of network costs should be recovered from residential ratepayers, who rely more on basic services than other services. If the recovery of these costs were shifted onto basic service, they would have a more secure revenue stream.<sup>28</sup>

Those who rely predominantly on basic service have argued that their needs do not cause the high costs imposed on the network by the more demanding services and they do not benefit from the higher levels of functionality that have been built into the network.<sup>29</sup> They argue that in the 1920s and 1930s these costs were driven by the need for higher quality—a need created by long distance service. From this point of view, the needs of high speed data transmission have been driving costs in the 1980s; in the years ahead broadband applications will drive costs.<sup>30</sup> Those who do not use these services do not feel they should pay for them.

The debate is not likely to be ended by the 1996 Act. Not only does the Act reiterate the belief that universal service depends on a fundamental commitment to affordable pricing based on just and reasonable rates for all households, but Section 254(k) of the 1996 Act reaffirms the principle of protecting universal service when allocating joint and common costs. Section 254(k) states:

*Subsidy of competitive services prohibited*—A telecommunications carrier may not use services that are not competitive to subsidize services that are subject to competition. The Commission, with respect to interstate services, and the states, with respect to intrastate services, shall establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services.

The Conference Report makes a point of stating that in adopting Section 254(k) the House is receding to the Senate.<sup>31</sup> The Senate report made it clear that a reasonable share of joint and common costs was the maximum that should be included in the rates for universal service, but that less could be allocated to these services.

---

The Commission and the states are required to establish any necessary cost allocation rules, accounting safeguards, and other guidelines to ensure that universal service bears no more than a reasonable share (and may bear less than a reasonable share) of the joint and common costs of facilities used to provide both competitive and noncompetitive services.<sup>32</sup>

Above all, consumer advocates view the loop (the wires that connect the end-user to the network and are used to complete all telephone calls—local, intralata long distance calls,<sup>33</sup> and interlata long distance—and to provide enhanced services) as a shared facility. If the loop were not provided by the existing local exchange companies, telecommunications service providers would have to build their own loops, or rent the use of some other loop in order to sell their services to the public. Because the loop is a joint and common cost shared by competitive and non-competitive services, it is subject to Section 254(k), meaning that universal service services should not bear more than a reasonable share of the loop's joint and common costs.

It is not only consumer advocates who take this view of the loop,<sup>34</sup> but even some local companies point out charges for the use of the loop represent the recovery of joint and common costs.<sup>35</sup> State regulators also take this view.<sup>36</sup>

Consumer advocates see the sharing of joint and common costs as the linchpin of the legislation.<sup>37</sup> Affordability can only be assured where there is a direct link between the growth of information, data, and video services and declining costs for basic access. As the network is filled up with enhanced and discretionary services, the cost of network access and plain old telephone service will decline for all people, if the link between use of the network and basic service rates is well-crafted. In a sense, economies of scope—the sharing of facilities between different services—can play the role that economies of scale played in the early days of the industry.<sup>38</sup>

### III.

## Affordability: explicit statements of complex goals

### A. Definition

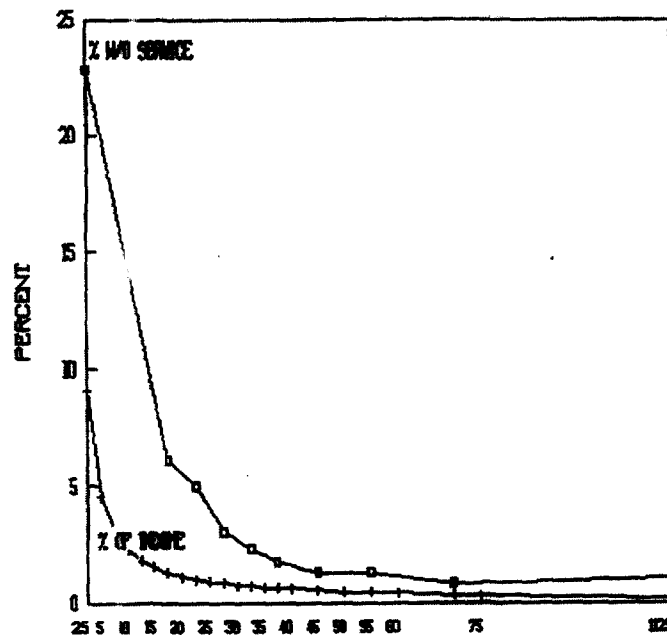
The explicit Congressional charge to ensure affordability is a new obligation.<sup>39</sup> The FCC's initial discussion of the definition of affordability, in the Notice of Proposed Rulemaking on universal service, highlights the inherent difficulty of this concept. The FCC begins by citing a definition of "affordable" that invokes both an absolute and a relative concept of affordability—

Webster's New World Dictionary defines the term "afford" as follows: "to have enough or the means for; bear the cost of without serious inconvenience."<sup>40</sup>

The first definition ("have enough or the means for") is an absolute concept in the sense that there is no qualifier. No matter how much it hurts, if a subscriber continues to pay for telecommunications service, telephone service is deemed by implication to be affordable. The second definition ("bear the cost of without serious inconvenience") is relative in the sense that the burden imposed is qualified by the term "serious inconvenience." If it hurts a lot to pay for telephone service, telephone service is not deemed to be affordable, even though the subscriber continues to pay for it.

Although the dictionary definition clearly has two aspects, the example the FCC's initial notice gives refers only to the absolute connotation of affordability: "For example, one such measure might be the

Figure III-1. Percent of households without service and percent of income devoted to basic service at various income levels



Sources:

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

U.S. Bureau of the Census, *Current Population Survey*, November 1994.

TABLE III-1. Income and telephone rates as a percent of income

Income category	Percent of all households	Percent of all households without service	Estimate		Cost		Affordable rate at .7 percent of income
			Point	Inc.	\$ per month	Percent of income	
LT 5000	5.98	22.8	midpoint	2,500.00	18.89	9.07	1.46
			endpoint	5,000.00	18.89	4.54	2.92
5 TO 7,499	5.71	16.5	midpoint	6,300.00	18.89	3.60	3.68
			endpoint	7,500.00	18.89	3.02	4.38
7,500 to 9,999	5.00	12.5	midpoint	8,750.00	18.89	2.59	5.10
			endpoint	10,000.00	18.89	2.27	5.83
10,000 to 12,499	6.14	9.3	midpoint	11,250.00	18.89	2.02	6.56
			endpoint	12,500.00	18.89	1.81	7.29
12,500 to 14,999	5.32	7.7	midpoint	13,750.00	18.89	1.65	8.02
			endpoint	15,000.00	18.89	1.51	8.75
15,000 to 19,999	7.80	6.1	midpoint	17,500.00	18.89	1.30	10.21
			endpoint	20,000.00	18.89	1.13	11.67
20,000 to 24,999	9.14	5.0	midpoint	22,500.00	18.89	1.01	13.13
			endpoint	25,000.00	18.89	.91	14.58
25,000 to 29,999	8.13	3.1	midpoint	27,500.00	18.89	.82	16.04
			endpoint	30,000.00	18.89	.76	17.50
30,000 to 34,999	7.43	2.3	midpoint	32,500.00	18.89	.70	18.96
			endpoint	35,000.00	18.89	.65	20.42
35,000 to 39,999	6.64	1.8	midpoint	37,500.00	18.89	.60	21.88
			endpoint	40,000.00	18.89	.57	23.33
40,000 to 49,999	9.45	1.3	midpoint	45,000.00	18.89	.50	26.25
			endpoint	50,000.00	18.89	.45	29.17
50,000 to 59,999	7.59	1.3	midpoint	55,000.00	18.89	.41	32.08
			endpoint	60,000.00	18.89	.38	35.00
60,000 to 74,999	6.08	.8	midpoint	67,500.00	18.89	.34	39.38
			endpoint	75,000.00	18.89	.30	43.75
75,000 or more	9.58	1.1	midpoint	113,000.00	18.89	.20	65.92

Source: U.S. Bureau of the Census, *Current Population Survey*, November 1994.

level of telecommunications service subscribership among targeted populations.<sup>41</sup> In fact, the notice repeatedly refers to the penetration rate as the measure of affordability.<sup>42</sup>

More recent editions of the Webster's Dictionary cite the relative concept as the primary definition of affordable—

(1) (a) To manage to bear without serious detriment; (b) To manage to pay for or incur the cost of.<sup>43</sup>

(1) (a) To manage to bear without serious detriment; (b) To be able to bear the cost of.<sup>44</sup>

Random House provides a similar definition.

(1) To be able to undergo, manage, or the like without serious consequence; (2) to be able to meet the expense of or spare the price of.<sup>45</sup>

Thus, the relative concept of affordability seems to be the primary connotation. The standard should be not whether one can pay the price, but whether that price causes serious detriment, consequence, or inconvenience.

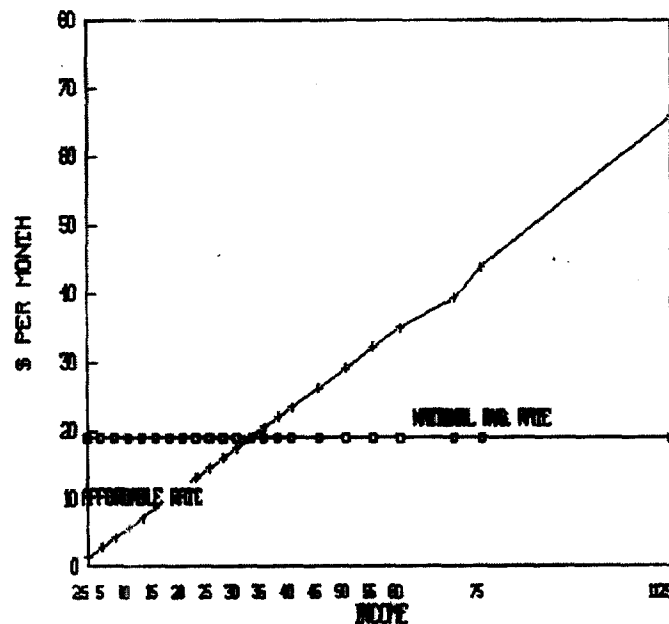
Consumer advocates reject a narrow definition of universal service as simple access to the phone because the telephone is a necessity and people will cling to it.<sup>46</sup> Even if households do not drop off the network, we must still ask—at the end of the twentieth century—whether they are able to use the phone as the basic means of communication. For the past half century we have woven the phone into the fabric of daily life. We have let decisions about where to live, where to locate services, how to acquire information, and how to allocate our time be fundamentally influenced by the degree of access to unlimited local calls. The telephone is the mainstay of daily communications, a foundation of economic,<sup>47</sup> social,<sup>48</sup> and political life.<sup>49</sup>

Given the tremendous importance of the telephone, it does not suffice to say that if a household has a phone it must be affordable, regardless of how much of a burden it places on the household budget.<sup>50</sup> Affordability is more complex than that. In this context the test of affordability is not simply whether or not people keep the phone, or whether or not they use it, but how much of a burden a reasonable level of consumption of this vital necessity places on the household budget.

## B. Measurement

Quantitative measures of the relative concept of affordability involve estimating the percentage of income that households might be forced to spend for service at various income levels and rate levels (see the Consumer Expenditure Survey compiled by the Bureau of Labor Statistics).<sup>51</sup> Qualitative measures include what people consider “too expensive” or “too much” to pay for telephone service. Examples of this measurement are levels of satisfaction and dissatisfaction with rates expressed in response to questions asked in opinion polls.<sup>52</sup>

Figure III-2. Affordable rates at .7 percent of income



### Sources:

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indices, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

U.S. Bureau of the Census, *Current Population Survey*, November 1994.

---

Quantitative measures of the absolute concept of affordability include penetration rates, as compiled by the Current Population Survey conducted by the Census Bureau. We can also find qualitative measures, where people are asked why they do not have, or have given up, telephone service. Examples of this measurement include the national study conducted by the American Association of Retired Persons and the Consumer Federation of America.<sup>55</sup>

Table III-1 and Figure III-2 present quantitative data from late 1994 to demonstrate the two aspects of affordability. They show the percentage of households at various income levels that do not subscribe to telephone service and the percentage of income that basic service charges represents for households with telephone service.

Among households with income below \$5,000 we observe that almost 23 percent do not have telephone service. On a national average basis, a household with an income of \$2,500 would be forced to pay 10.1 percent of that income to obtain service. The percentage of households without telephone service declines steadily as income rises, as does the percentage of income required to pay for service. For those with incomes between \$10,000 and \$12,500, about 9.3 percent of households do not have telephone service (\$12,500 being approximately the upper limit of poverty-level income for multi-person households). The percentage of households without telephone service drops rapidly as income rises above this level. By \$25,000 the percentage of households with telephones exceeds 90 percent. Penetration rates stabilize at about 99 percent when income reaches \$35,000. At this level, basic monthly service costs consume about .7 percent of income.

Based upon this data, we can suggest a rule of thumb for affordability measured as penetration and burden. First, since we observe that at high levels of income approximately 99 percent of all households have telephone service, it is reasonable to assume that if the cost of service were not a burden, 99 percent of all households would have service. ("High" levels of income in this case starts at \$35,000—very firmly in the middle class.)

We can flip this observation around to note that the overwhelming majority of households without telephone service are low-income households. For example, although 23 percent of households have income below \$12,500, we find that 61 percent of all those without telephone service are in this group. If a household has an income below \$12,500 it is 10 times more likely to have no telephone service than a household with an income above \$35,000.

Second, we have observed across time that only when the cost of service drops below 1 percent of income in the aggregate does the telephone penetration rate begin to exceed 90 percent. We now observe in a more disaggregated approach that penetration rates of 99 percent are consistently achieved only where the cost falls below 1 percent of income—to about .7 percent. Thus, .7 percent of income would seem to be a target level for cost, if universal service is to be achieved. Figure III-2 shows that this is a demanding goal. For lower income groups, .7 percent of income is a relatively small figure, compared to current national average rates. For the lowest income category, .7 percent of income is only \$1 to \$3 per month. Even at the limit of poverty level income (\$12,500), .7 percent of income is just over \$7 per month, less than half of the national average rate for local telephone service.

It is clear that for households at the lower end of the income distribution, telephone service is simply not affordable by both measures of affordability—the percentage of households without telephone service and the burden that having telephone service places on household budgets. Large percentages of households at this income level do not subscribe to service and those that do are forced to devote a disproportionately large share of their income to pay for basic service.

---

It is also clear that the fundamental commitment to just and reasonable rates has driven the overall affordability of telephone service. In the historical development of telephone subscribership and in the new law, just and reasonable rates underlie affordability for the vast majority of consumers. With this in mind, it does not seem overly-optimistic to look at the expanded provisions for universal service in the 1996 Act as a means for just and reasonable rates by available to all.

---

## IV.

### Basic Service

#### A. The evolving concept of basic service

Basic service has always been the target of universal service policy, but the meaning of that term has never been specifically defined. The 1996 Act and actions by state regulators and legislators now seek to define basic service more precisely. At the federal and state levels public policymakers are now in the process of deciding which package of services (core services) should be included in the definition of basic service. The potential definition of basic service has become quite rich and complex.

The key observation that underlies this process from the public interest point of view is that it is perfectly reasonable, even necessary, for basic service to be defined differently at different points in time and for different groups. The purpose of ensuring basic service is to provide citizens with effective access to the telecommunications network and it is only natural that basic service would change as society changes or be somewhat different to meet the needs of individuals or institutions in very different circumstances.<sup>54</sup>

Some services that may be luxuries at one point in time become necessary for effective participation in society as these services become more deeply embedded in the network and relied upon for daily social activities, such as touchtone telephone service. As technological progress takes place, old ways of doing things fall by the wayside. Because they take too long or cost too much, they are deemed inadequate, even though a decade before they may have been the norm or even leading edge. As technology progresses, individuals require higher levels of functionality to survive economically.<sup>55</sup> From this point of view, "necessary" is not defined by the simple technological possibility of providing service, but by the economic requirement to provide adequate and efficient service for the public convenience. Ironically, the more vigorous economic progress is, the more rapidly this evolution takes place.

Similarly, some population groups may not be able to gain access and use of the telecommunications network if they are not provided with specific additional services that may not be required by other segments of the population. Here, too, there is a growing list of services that can help to ensure access for these targeted groups.

#### B. Candidates for immediate inclusion in basic service

The 1996 Act does not restrict the definition of service to "telephone exchange service." Rather, the Act uses the broader concept of "telecommunications services."<sup>56</sup> In recognition of this broader concept, the FCC proposed the following set of services be included in the universal service definition—voice grade access to the public switched network, touchtone, single party lines, access to emergency services, access to operator services, and relay services (required elsewhere in the law).<sup>57</sup>

At the state level the list of potential services for inclusion under the umbrella of basic service has become quite long<sup>58</sup> (see Table IV-1). Each of the services on the list has been included in the definition of basic service by one or more states and has received at least some support in the federal proceeding.

The FCC neglected to include a number of other services that are presently embodied in telecommunications services purchased by a majority of subscribers and considered to be a public necessity. Among the most important are the following.

*Use/Flat Rate Service:* Because the telephone has become the mainstay of daily communications under a flat rate approach to service, usage must be included in the definition of basic service. Flat rate

---

TABLE IV-1. Components of basic service for various groups

*Services Included in Basic Service For All Subscribers*

Single party service  
Voice grade  
Local usage  
Touchtone  
Toll blocking  
Directory listing  
Long distance equal access  
E-911  
Relay service  
Operator assistance access  
Directory assistance (411)  
Fax capability  
Data capability (at specified speed)  
Connectivity to all telecommunications

---

telephone service, which provides subscribers with unlimited local calls, is by far the service used by the great majority of subscribers in this country, even where measured service is available as an option. The Commission recognizes that one of the criteria for a service's inclusion in the definition of universal service is that the service has, "through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers." The public preference for flat rate service is absolutely clear.

*Additional Services:* Other services that should be included in the definition are directory assistance, the provision of and listing in annual local directories, call trace and 900-number blocking service, equal access to interexchange carriers, interoffice digital facilities, equal access to advanced switching technology, including SS7 services, and interconnection among all carriers. For the vast majority of ratepayers, these have already been deployed and are being recovered in rates.

## **B. Universal service for targeted groups**

For specific groups, additional services have been included under the general policy of promoting universal service (see Table IV-2). Several states include additional services at reduced charges for low-income households. These are services that non-low-income households might choose to purchase because they are deemed important for health and safety or other reasons. Universal service policy seeks to ensure that low-income households are not denied access to these services because of their lack of resources.

The FCC identified a number of specific additions to the list of basic services to consider for these targeted groups, primarily based on the fact that they had been included by one or more states or suggested in ongoing proceedings. As Table IV-2 shows, the list of potential services has grown. The 1996 Act also makes specific provision for meeting the needs of consumers with disabilities. To the extent that the Act recognizes that the needs of consumers with disabilities goes beyond the concept of a relay service (the service that allows individuals with hearing or speech disabilities to use an intermediary to translate audio communication to textual communication or vice versa), section 255 of the law represents a major expansion of the commitment to universal service.

Wisconsin already has an extensive program to ensure universal service for disabled consumers. In addition to relay service, the program is intended to ensure "effective" access to the network. The mere availability of relay service does not necessarily ensure that consumers will be able to obtain the equipment necessary to access the network, nor does it meet the needs of those who require something other than relay service. Therefore, a customer-premise equipment (CPE) program may be instituted. In

TABLE IV-2. Additional Services for Low-income Households at a Discount

900 number blocking
Per line Caller ID blocking
Long distance discount plans
Operator assistance (certain functions unbilled)
Call intercept
<i>Services to Ensure Access for Consumers with Disabilities</i>
Customer premise equipment
Voucher for purchase
Rental at cost
Discount connectivity services
Long distance discount for TTY users
Free operator assisted dialing
Expanded unbilled directory assistance
Free essential custom calling features

Wisconsin this can be achieved either through a voucher program that assists in the purchase of equipment or an at-cost rental program. To ensure comparable access for consumers with disabilities, additional discounts are offered. These include long distance discounts for TTY users, additional unbilled directory calls, free operator assistance for dialing, and free custom calling features that are essential to accessibility.

Finally, the 1996 Act also makes provision for targeted assistance to public institutions—schools, health care providers, and libraries. The needs of these institutions are to be met in five different ways.

First, whatever steps that are necessary to ensure affordability of the core services included in basic service are to be made available to these institutions.<sup>60</sup>

Second, the FCC can identify additional services which may be considered core services for these institutions.<sup>61</sup>

Third, health care providers in rural areas are entitled to receive services, upon the filing of a bona fide request, at rates which are similar to those at which the services are provided in urban areas.<sup>62</sup>

Fourth, schools and libraries are entitled to receive a discount on any core services which fall under the definition of universal service.<sup>63</sup>

Fifth, public institutions may receive preferential access to advanced services as the result of the charge to the FCC to establish competitively neutral rules—

(A) to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services...; and

(B) to define the circumstances under which a telecommunications carrier may be required to connect its network to such public institutional telecommunications users.<sup>64</sup>

Programs to promote public institutional use of telecommunications and information services are proliferating rapidly at the state level.

### **C. Principles for the future expansion of universal service**

In the past the evolution of basic service was driven by technology and economic investment decisions of the local companies that owned the telephone network.<sup>65</sup> Historically technologies that cut costs and

---

increase functionality have been deployed and funded through inclusion in rates, after investments have actually been made. Occasionally new services were first billed as "optional" then later included in basic rates (for example, touchtone service). The process was rarely subject to explicit public policy oversight.

In recent years the process has been more subject to direct public policy oversight. Certain infrastructure investment (dedicated broadband networks for schools) or public safety investments, like emergency service (E-911) have been explicitly funded through the public funds (such as, governmentally ordered expenditure of taxpayer or ratepayer dollars).

In Section 254(c)(1), the 1996 Act charges the Commission and the Joint Board with creating a framework for considering additional services for inclusion in the universal service definition.

The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by federal universal service support mechanisms shall consider the extent to which such telecommunications services—

- A) Are essential to education, public health, and public safety;
- B) Have, through the operation of market choices by customers been subscribed to by a substantial majority of residential customers;
- C) Are being deployed in public communications networks by telecommunications carriers; and
- D) Are consistent with the public interest, convenience, and necessity.

In addition to considering some or all of the above four criteria, state commissions and legislatures, as well as public interest groups and other citizen intervenors in universal service proceedings, have suggested additional considerations that should be used to determine whether an additional service should be added to the definition of universal service.<sup>66</sup>

For example, the Oregon Commission identified the following characteristics:<sup>67</sup>

- The level of demand for a service
- Whether it is an "access" technology
- Whether it is available on an optional basis
- The burden it would place on the cost of universal service
- Whether it is generally available without regulation
- Whether it is necessary or desirable for public policy.

Others have suggested similar sets of additional characteristics. For example, three consumer groups suggested the following criteria in the FCC universal service proceeding.<sup>68</sup>

The service must be a communications service which connects each to all

The service must be a "mass market" service, which is most economical when sold in large volume

The needs and preferences of all users must have been considered in an open, public forum

---

These principles are intended to ensure that services are added to the universal service definition in a manner that meets the needs of the broad public without significantly raising (and hopefully lowering) the cost of universal service.

---

## **V.**

### **Targeted programs to promote universal service**

While the approach to universal service for the average citizen has remained essentially unchanged by the 1996 Act—just and reasonable rates accomplished through allocation of a reasonable share of common costs—the approach to ensuring universal service for specific groups which are likely to be unserved or underserved has become much more complex and precise. Providing universal service for these groups requires the implementation of specific programs. This raises a host of issues about program administration—matters such as certification for participation, determination of benefit levels, distribution of benefits, and collection of funds to defray program costs. Programs to provide targeted assistance are by no means a new development, however.

Assistance to low-income households, or Lifeline programs, was instituted at the federal level in the mid-1980s, in conjunction with the imposition of the federal subscriber line charge. For these households, service may not cost any more than for other consumers, but their income is not adequate to allow the households to afford telephone service. As shown in Chapter III, the percentage of income that basic service costs represent to low-income households are prohibitive.

Assistance to high-cost areas—particularly rural communities—stretches back at least to the mid-1930s, when cooperatives were formed to provide telephone service in rural areas. The FCC also has had a program in place for years to help defray the costs of telephone service to these areas. The 1996 Act makes the policy of assistance more explicit and expands it by seeking to ensure the availability of comparable services at comparable rates in high-cost areas.

Accessibility for consumers with disabilities has been addressed in the past in the form of a mandate for relay service. The 1996 Act expands this policy significantly. It brings forward language from the Americans With Disabilities Act and adds greater specificity for the telecommunications industry.

A newer category of targeted assistance is public institutions dealing with health and education—schools, hospitals, and libraries. These institutions had begun to receive small amounts of funding from the federal and state governments to use the growing telecommunications network in the early 1990s. The 1996 Act expands that commitment by requiring discounts for universal service and the provision of advanced services.

#### **A. People programs**

##### ***1. Justification***

Having noted the history of these targeted programs and their current status in the law, it is important to understand that programs to ensure access for individuals, low-income consumers, and consumers with disabilities still need to be promoted. These people programs are handled differently in the law than the programs which deal with companies and institutions. For companies we find a specific standard, “reasonably comparable services at reasonably comparable rates.” For institutions, we find specific reference to “discounts.” But for low-income consumers there is no reference to pricing at all, except the general wording on just, reasonable, and affordable, and the preservation of the current Lifeline program. Fourteen states do not currently participate in the Lifeline program and many of those that do have very poor programs.

For consumers with disabilities, we have the general language of the statute which requires that equipment manufacturers and service providers take steps to ensure that telecommunications services and

---

equipment are "accessible to and usable by individuals with disabilities, if readily achievable." We have no specific references to discounts, however. Even if a service is readily achievable, it may come with a price tag that is too high to make it affordable for the consumer.

Thus, it is clear that subsidies or discounts are necessary to achieve universal service for the people who are unable to pay a price that covers the cost of receiving the basic service that they need. Federal and state law has tolerated subsidies and discounts for each of the categories identified above for decades. The new federal law mandates certain policies—comparable rates, discounts, provision of access—that require subsidies and discounts. There is virtually no chance that these subsidies and discounts will run afoul of federal law. And although the federal law preserves the authority of the states to go beyond federal universal service policy, it does not allow the states to do less than the federal government mandates. (It is certainly possible that this pre-emption will be challenged, however.)

A number of arguments have been offered for the creation of these assistance programs.<sup>99</sup> Given the major changes in industry structure, this would be an appropriate moment to reconsider participation in the Lifeline program, for example. The structure of the federal program will almost certainly result in a net positive flow of resources into the state, should it choose to participate, and the failure to participate in the program means, in essence, that citizens of each individual state are supporting universal service in other states. If the state does not participate its citizens are foregoing the opportunity to be the beneficiaries, in the aggregate, of economic resources within the state. The size of the foregone economic resources is likely to increase, as Lifeline programs are expanded in other states in response to industry restructuring.

"Getting a piece of the pie" is only one small reason to participate in the federal Lifeline program. More fundamentally, in the past decade telephone companies have begun to shift their focus from the provision of basic telecommunications services—the ability to place and receive voice grade calls—to providing enhanced services. The emphasis has shifted to capital deepening which provides greater functionality and capacity that are not necessary to meet the demand for basic voice grade communications. Modernization of the network and provision of enhanced services is a laudable goal, but it is not the only goal of the system. The costs of modernization must not be borne by those who seek only to meet their basic needs for daily telecommunications through the network.

This would be of no concern to users of basic residential services if the costs were being fully borne by the users who are causing it to be installed. The allocation of the costs and benefits of each piece of equipment deserves close scrutiny because the network is now pursuing multiple goals. Rigorous cost accounting would shift costs from the residential sector, in general, and the low-income segments of the residential sector in particular, to other sectors. In the new period of capital deepening an effort must be made to identify the costs imposed on the network more carefully for precisely defined classes of consumers. The Lifeline program is designed to ensure that the goal of universal service is not compromised by the subsidiary goal of providing enhanced services and moving into the information age.

Rigorous cost-causative analysis will show that low-income consumers impose fewer costs on the network. They have fewer of the more exotic or specialized demands that have been imposing costs on the system. The extremely expensive design and engineering criteria of the network have been imposed on the system to meet the needs of services other than basic local exchange.

This argument applies to all residential subscribers. It should apply even more forcefully to lower income households, however, since they are least likely to be users of the more exotic services. In light of the fact that universal service has not been achieved to date, it is especially important that modernization expenditures and costs not be allowed to further delay accomplishment of the primary goal of the network. A Lifeline program is one way to ensure that this does not happen.

---

Much of the recent thrust for price changes in the telephone industry stems from an assertion that companies must price their toll and enhanced services to avoid revenue erosion from competition—to keep consumers from bypassing their network.

These arguments seem to have lost sight of the simple fact that lower income households can be driven off the network too. Judging by penetration rates, the greatest current bypass of the network occurs among low-income households. The arguments used to justify differential pricing for price sensitive business customers apply equally, if not with more force, to low-income households.

If households are driven off, or prevented from joining the network, investment in the facilities that serve them is stranded—the investment is in place, but that part of the network will generate no revenue. Since this investment is not quickly written off, it can be a burden to other ratepayers. Insofar as lines are in place, a very good case could be made that the low-income households should be incrementally priced. Consumers mean income for companies, and affordable rates for low-income households still generate more income than an unused line. If services are properly priced, these households can be induced to stay on the network and make a contribution to fixed costs.

There are two economic externalities that indicate that ratepayers would be better off with a Lifeline program. An externality arises when the action of one person affects the welfare of another person in a way that is not reflected in the market prices.<sup>70</sup>

First, ratepayers derive a benefit from having a larger network.<sup>71</sup> The more people one can reach, or be reached by, the more value the network has. Businesses in particular benefit from a denser network.

Second, society in general benefits from the expansion of the network.<sup>72</sup> As members of society are able to contact each other more efficiently, the overall welfare of society increases. Individuals are more productive. In some cases, public health is improved. For example, prenatal care is frequently dispensed by telephone. Better prenatal care can eliminate many health problems—increasing the health of individual members of society.

Some of these benefits may result in a lowering of costs to members of society. Increasing productivity and improving health may lower health care costs or the costs of other social programs that are paid for by taxpayers. Thus, although ratepayers are charged a little more as a result of the Lifeline program, they get significant benefits as ratepayers and taxpayers.

Given the federal decision to match local Lifeline discounts up to the amount of the federal subscriber line charge, this indirect externality has been increased. Because of the manner in which the federal matching funds are raised, there is a net transfer of funds into the state. For every two dollars of relief that the households see, one dollar comes from the federal government and one dollar comes from the states, but all the money stays in the state. Thus, the impact of the program on productivity, health, and so on, is multiplied to the good, from the ratepayer's and taxpayer's point of view.

In light of the above discussion we must be concerned about how to ensure that the externalities are captured and how to determine what impact they have on the analysis of economic efficiency and social equity.

Economic theory generally suggests that lump sum taxes are the way to raise funds for a Lifeline program and monetary transfer payments or vouchers dispersed through public assistance programs are the way to distribute the resources. The unique nature of the phone system dictates otherwise, however. The direct external benefit of the telephone is a true externality. That is, network value is not necessarily optimized when individuals improve their personal welfare. The ratepayers who could benefit from a denser network would not derive the full benefit of the program because the penetration rate would not be raised to the optimum level.